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PHILOSOPHY IN THE SERVICE OF SCIENCE

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PHILOSOPHY is often charged with being careless of science or even with being deliberately superior to science and anything scientific. Among scientists the very word philosophy may even be a word of offense. In the name of all that is right and true and lovely and of good report the devotee of science is warned that above all things he must not get philosophical. To quote the Scriptures—somewhat at a distance—he can not serve science and philosophy. Simply, philosophy is unscientific.

As to this charge Lord Byron has happened to speak wisely:¹

And after all what is a lie? 'T is but
The truth in masquerade; and I defy
Historians, heroes, lawyers, priests to put
A fact without some leaven of a lie.

Philosophy is indeed unscientific; but also philosophy has long and faithfully been in the service of science. How long? Ever since science began. How faithfully? Let me not say, lest I seem to boast. Only, in a word as quaint as appropriate, philosophy has been true handmaid of science, serving her mistress well if not always apparently. Philosophy most certainly, being so loyal a servant, would not speak rudely or disrespectfully; but many another faithful maid has said of her mistress: "I just tell you, it 's me as has taught her how!" Philosophy's service of science, then, has not been exactly slavish or conventional; but it has been real and, as does happen even in service, it has been instructive.

Of course philosophy has served other disciplines besides science; theology, for example, as will be pointed out here in due time; but its service as handmaid of science, besides coming in an interesting historical sequence after that of theology, obviously relates to the subject of this present essay. Also, as it is finding expression at the present time, especially if the present be appreciated in the light of the historical approach, it has special significance for certain tendencies of the time. In her service of science, furthermore, philosophy proves every

¹ Don Juan, Canto xi, stanza 37.

century or two to have changed her mistress, leaving one science to go to another. Her fickleness, however, like her unconventional way, in no sense detracts from the interest and importance of the relationship. On the contrary, when understood, it throws light on the real nature and value of the service itself and also it provides any one, who can and will read it, a most absorbing story.

Now I can not set up any claim to being a good story-teller; but I shall make an attempt, trusting that my own interest will supply some inspiration. Before beginning, however, it seems wise that I say something of the general character of philosophy's service of any discipline. Thus this service is—how shall I put it?—wholly characteristic, of course; I suppose, like that of any handmaid with her own inevitable manner, brogue, accent, atmosphere. Being what she is, philosophy, however servile, must always be concerned, whether quietly or assertively, with the universe, not just with some special field or point of view. Generalization is her very life and purpose and, although it may be what makes her restless and unconventional, it is her opportunity for a vital service. True, the opportunity has great dangers and from these many have suffered; but opportunity always implies danger. Philosophy, again, must be speculative, even in a sense imaginative, inexact, poetic, not soberly literal, not formally dogmatic, as we say of theology, or empirical and positive, as we say of exact or would-be exact science. Her interest, too, must be vital and appreciative, not just "objective," not just descriptive and explanatory, not under constraint of too precise instruments and too accurate measurements; concerned, then, with values, not merely with facts. So the commands, the specific doctrines and precepts of her mistress, whoever this happen to be at the time, she takes and must take only as mediating symbols or—a better word—analogies in the sense even of metaphors. Especially must philosophy never commit the error, by no means uncommon among scientists, of actually or virtually taking useful standpoints and methods as literal indications of reality. No science is metaphysics. So true are the various things that have just been said that philosophy's service of a science is often transforming or transfiguring almost if not quite to the point of baffling recognition. Once upon a time, you know, just an ordinary maid went out in her mistress's clothes; was met on the street by the mistress herself, and was not discovered. Philosophy, while no ordinary maid, must still take liberties. Philosophically thinking the whole after the manner of any scientific part, be this doctrine, standpoint or

method, may or indeed must lead to some violence. Facts and methods, valued for philosophy as for life, must undergo change. It is, after all, a poor service that does not make itself really felt!

But, to turn now to the story, the progress of Christendom does show philosophy in a most significant succession of positions of service. To begin with, as often chronicled, in the Middle Ages philosophy was handmaid of the Church or of dogmatic theology, *ancilla ecclesiæ*. In the seventeenth century or thereabouts began the service of science; first, during the seventeenth and eighteenth centuries, of mechanics and mathematics; then, in the nineteenth, of biology; and, more recently, of anthropology and psychology. Theologism, mathematicalism or mechanicalism, biologism and psychologism: in such terms, very general indeed, may one tell the history of the philosophy of Christendom.

And this history, as it is true, can not but have interest. Thus, it implies what many a scientist would readily and too cheerfully overlook, that theology has a real place in the growth of the intellectual life, being even a cry in the wilderness before the coming of science, and that each of those sciences, at least for philosophy, has or has had its own special day and generation. It is true that for those who must regard science and theology as essentially opposed and incongruous any suggestion of historical sequence and continuity is bound to cause at least wonder, if not something stronger! Many, too, may wish to protest against a view that arranges important sciences in a temporal order and so seems to question their equality and their essential contemporaneousness. No science cares in these days to be treated as a "has-been." But, whatever the wonder or the protest, theology has had its real place and, although herein is no ground for denial of contemporaneousness, the different sciences do fall into an historical order; the earlier, as I would submit, being now in varying degrees of only mediate interest and value, the latest of immediate interest and value, to life and philosophy.

Furthermore, philosophy being life's reaction, intellectual and volitional, to the world as experienced and as immediately interesting at any given time, in our history with its sequence: theologism, mechanicalism and the rest, we can see that upon each change in the ism man is less aloof from the natural world, more at home in this world, more intimate with its life. In short—and just here is a matter of special interest—that sequence reveals a centuries-long process of civilization—syn-

onymous with naturalization?—or say biologically of adaptation to environment. If the phrase, adaptation to environment, be misleading or out of date in its point of view, then any one who prefers may substitute sympathetic or functional change in man and his world or, again, progressive variation in their manner of interaction or in the mediation of their essential and persistent relationship. In history as in biology, unless I be very much mistaken, organism and environment have evolved or grown together. Still, for simplicity's sake, we may here keep the admittedly one-sided point of view of the more conventional phrase, adaptation to environment.

After a fashion every one knows how our western civilization, how Christendom, at first shut up in an unworldly—at least in theory and proclamation unworldly—institution, gradually came to earth; at first with much reserve and fear, with little real candor, but eventually with open enthusiasm and appreciation. In the twelfth to sixteenth century, notably in the period of the Renaissance, the great institution, the Europe-ruling Roman Catholic Church, turned creatively artistic, seeking so to humanize and acclimatize or naturalize all the various factors and practises, the ways and the offices, the doctrines and the imagery, of its life and organization. However selfishly and defensively, it made real appeal from the spiritual to the sensuous and physical, from its own separate world to the “external” material world, from the unnatural or supernatural to the natural, evincing an interest in rhetoric as well as in dogma and logic, in man's sensitively living body as well as in his immortal soul, in the vernacular languages as well as in the dead and other-worldly Latin and at least for first resort in the subtleties of cunning and artful diplomacy in place of compulsion by holy mandate or—the worldly counterpart of this—brute force; and, while the Church turning thus to an artistic expression of its life doubtless did have at first more of intrigue and indirection in it than of candor and appreciation, the step which Christian civilization took at that time, so to speak, from Heaven towards earth, from its institutional aloofness towards nature, was very real and very important as a first positive step both towards an eventual adaptation and towards natural science. Appearing as compromise and intrigue, it nevertheless was in service of an honest purpose. In clear evidence of something more than mere defense and selfish intrigue the Church of the time had its liberals as well as its conservatives and in good time came the Reformation and the great schism which brought a distinct and positive candor towards the human and natural. Followed the great era of

objective science, of democracy, industrialism, machinery, in a word of social, moral and political as well as intellectual naturalism in place of the earlier aloofness and unnaturalism.

But now, while after a fashion every one does know this story and in it can see man slowly but surely finding himself in nature, adapting himself to his environment, there are aspects of the process, as so recounted, and particular stages of it, which need special consideration.

In the first place, how rose at all that unworldly institution in which so long civilization dwelt aloof? Historically, whatever be any one's religious or theological accounting for it, it rose as a device of safe retirement, an ark some very properly have called it, when with the collapse of the ancient civilizations, notably of Rome, the great floods came. As those floods rose, civilization withdrew into itself, gathering its acquired ways and protective covering about it. Did not the great father St. Augustine proclaim his "City of God," the Church, and did not the Bishop of Rome come into his papal power, as Rome approached and finally reached her fall? As a device of adaptation the Church doubtless seems hopelessly negative, adaptive through withdrawal rather than through direct action and even suggesting one of those strategical retreats of which we were hearing so often a year or two ago; but, negative or not, it proved not only a wonderfully effective device, strategically wise for its day and generation, but also—and this I would now specially stress—a most valuable preparation for the more aggressive and openly practical enterprises that came later. The very barbarians who overwhelmed Rome it took captive. It assimilated to itself all of western Europe and by its rites and offices, its education in all departments of life, its splendid organization, it really made our modern rationalistic or scientific naturalism the true lineal descendant of its institutional supernaturalism, possible. Very much as alchemy developed into chemistry or astrology into astronomy, so its régime, moral and intellectual, strangely enough only the more rigorous because of the magic or the supernaturalism upon which it counted, eventually made possible the larger and only more general rationalism and mechanicalism which was inaugurated practically with such achievements as the successful navigation of the open sea and theoretically with the successful use—as for example by Galileo—of the mathematical equation in explanation of natural phenomena.

Few have seemed really to appreciate that, practically or theoretically, the change from a supernaturalistic, militaristic institution to a mechanical nature was only the outcome of a

generalization by which the spirit of the institution sought and found itself in the world as a whole. Such, however, appears to have been the fact and this fact in a peculiarly significant way reveals the adaptation-value of the great medieval institution besides showing the active and serviceable presence of philosophy and generalization. It shows, too, that the important progress made in the eighteenth century, when the naturalistic rationalism succeeded the old order, was really evolutionary rather than merely revolutionary in character.

That the modern era got its schooling in the Middle Ages, Protestantism from Catholicism, democracy from monarchy, industrialism from militarism, the mechanic from the soldier, rationalism from apologetics, mechanicalism from dogmatic institutionalism, inductive science from deductive, mathematics from positive legalism, even moral independence and conscience from the Church and its confessional, needs to be clearly recognized and appreciated. The pupil, moreover, learned his lesson well. But, not to prolong this chapter of my story, the new life did spring out of the old and an age of institutionalism gave place to an age of rationalism. Machinery, authority, causation all turned universal; creationism yielded to a general mechanicalism; theology opened into science.

And with the coming of the era of science, institutional ritual and law being subordinated to natural law, our story of Christendom's progressive adaptation to environment gets somewhat easier. Certainly any one can appreciate the progress in the change from mathematics and mechanics to biology or in that from biology to anthropology and psychology. With each step, as has been pointed out already, man who in the Church had belonged to another world rather than to this and who had lived consciously and deliberately with reference to the hereafter gets ever nearer this or ever more truly in-and-of this. At first we see him with mechanics coming into a general but still only formal, then with biology into a distinctly more vital relation to this; until with the last, psychology, he is in an intimate and personal relationship. Certainly philosophy's present-day psychologism, as shown in pragmatism, experimental idealism, the many types of realism—radical, scientific, critical, "new," what you please—has quite outdone biology in its intimations of the unity of man and nature; because it has made, not merely organically living, but also consciously living man and nature most vitally and essentially one. Consciousness carries a far closer intimacy than organic life. Also for full understanding it should be remembered that today, quite as truly as mechanics or biology, psychology is

to be looked upon as one of the real physical or rather natural sciences.

In spite of all that has been said my meaning may not yet be clear. In the sequence of philosophy's disciplines: theologism, mechanicalism, biologism, psychologism, no such story as was promised may have appeared. Possibly, then, at risk of tedious repetition, it may be well with a change not of the subject-matter but simply of the angle of view to add the following. Four conceptions: institution, mechanism, organism and conscious being, the human individual or person, have taken, each its turn in the order given, at holding the center of man's interest in and understanding of nature and have marked each an important step in man's progress, as he has taken possession of the earth. To science, even including under this term theology which has been found to have its place in the sequence and, as now I would add, including also jurisprudence which characteristically is science of the institution as temporal, formal, positive, theology being characteristically science of the institution as eternal and vital, as originally purposed and created and as maintained—to science, I say, the conceptions: institution, mechanism, organism and person, each one as it has come up, have referred to something special and definable, tangible and capable of positive identification. Definition and such identification are conditions of science. But in each instance, not less from demands of practical life than from those of theory, the handmaid philosophy has been in attendance and her service, faithful if not always appreciated, has induced a generalization from the particular and positive conception involved and so has opened the way to the next conception. Thus, as we have remarked, a dogmatic, supernaturalistic institutionalism gave place to a general and naturalistic mechanicalism. Even the creating cause and propelling force, acting from without, of the institution was made general, as is shown in mechanicalism's substitution of universal causation for the institution's dogma of only-once-upon-a-time causation or creation.² But also, thanks again to the service of philosophy, the conception of mechanism in its turn gave place to that of organism. What is an organism but general mechanism or mechanism become versatile, that is, natively mobile or active with the freed mechanical principle and so no longer bound to the routine of any single application of that principle, capable in other words of indefinite mechanical adaptations.

² Physical science's long dependence on the two principles, uniformity of *nature*—no longer just of the institutional life—and *universal* causation, has thus a most interesting historical antecedence.

In the person, finally, the generalization or the versatility is seen to be developed still further by the addition of conscious initiative to the adaptability.

So in the four conceptions, as in the four isms, we now have our story before us. The story does show, too, what was promised for it, namely, man's progressive adaptation to the natural environment, his gradual finding himself in nature, and it shows also in each important episode the constant service of philosophy, whose generalizations have really served science; not servilely, but in the vital way of inaugurating the new epochs instead of merely maintaining the old ones. Again, in indication of what the progressive adaptation and generalization have implied, the story shows an increasing versatility for human life. But particularly interesting as is this association of progressive adaptation with increasing versatility, it is for us here only to note how the history reveals philosophy as vitally, although never formally, scientific and thus shows how that lie about philosophy being unscientific was only a great truth in masquerade. That, unfortunately, professional philosophers have often neglected their great opportunity and even flagrantly abused it or that scientists themselves have sometimes turned philosophical and have so led their own science out of its particular captivity does not affect the matter at all.

Now, once more as to the progress from mechanicalism through biologism to psychologism, there is an interesting incident of the movement that merits some attention, although easily too much might be made of it. Not only does mechanicalism mark an early stage of the adaptation-process, in which man and his environment can hardly be said yet to have come into a close or vital unity, but also the early science of mechanics, especially as appealing to philosophy, was what might be called a gross mechanics, dealing as it did with the great bodies of the solar system, that is, with the gross and also the more distant factors of the physical or natural environment. Psychology, in sharp contrast, as the latest of the sciences, is concerned with the minute and very closest factors. For psychology the environment is no glorious and wonderful firmament, no orderly procession of the planets, impressive for the distances and the orbits and expressive of a great law, but is, instead, a close, sensuously felt and very real presence; not a matter, then, of distant view and contemplative wonder, but something immediately at hand.

No wondrous whirl of earth or sky,
Nor stars in ordered place:
But nearer things, like wind and rain,
That beat against one's face.

Such a difference, I say, between the earlier mechanics and the later psychology must not be taken too seriously; but, however superficial it may seem to be, it does in one more way show the progress of adaptation.

But, finally, of psychology and psychologism something special needs still to be said, lest there still be misunderstanding. Psychology is "science of conscious life" and in this character it might be taken for almost anything, including even the old-time "science of the soul." Present-day psychology, however, while truly being "science of conscious life," is also at the same time the latest natural science, as has been pointed out here. It is a natural science and to it such special branches of natural science as biology, physiology, neurology, are of greatest mediate value. It is itself, too, an experimental and laboratory science and so through mechanical methods and instruments it depends, albeit only mediately, on the narrowly physical as well as on the biological sciences. Accordingly in its character of being a natural science even while it is also psychology we may see the peculiar value of its coming at the close of the historical sequence. For it man and nature are indeed one. In fact its two characters or rôles, psychology *and* natural science, are so mingled that, just to allow ourselves a little amusement, its situation is not unlike that of the man who unfortunately or fortunately was so very thin that he could never decide, when in pain, whether he had a backache or a stomachache. Current philosophy, essentially psychologistic, knows not whether it is idealism or realism. A most happy predicament!

It would be interesting to close the story of adaptation as told here with some discussion of the moral and political, social and economic changes that have come with the changes in isms or in ruling conceptions. About an association of one group of changes with the other there can be no doubt. Science and philosophy are hardly epiphenomena. They are hardly accompaniments of the history of human affairs without being really and vitally of it. Their very reflection of the process of adaptation would seem to be conclusive evidence of this, if evidence were needed. But the story originally promised has been told and other matters, however interesting, must be left for another occasion.